

**PANEL DISCUSSION**  
**RISK ANALYSIS IN FLOOD PLAIN MANAGEMENT**  
**Challenges for the Future**

By Ken Kwickl

**1. Introduction**

The purpose of this presentation was to summarize the status of risk-based analyses development and implementation in the Corps of Engineers. The presentation is primarily based on information presented in papers during the previous two days of this workshop. The “challenges” presented here are also based on the author’s perceptions of acceptance of risk analysis within the Corps, use of the techniques, and comments and concerns of various entities outside the Corps of Engineers.

**2. Challenges for the Corps of Engineers**

a. Challenges for the Districts

Corps of Engineers Districts and Divisions must continue to be educated on risk-based technology. Early on in the implementation of risk analysis, the learning curve was steep, and although it has leveled off to some extent, there is still much that can be learned and improved upon. Because risk analysis techniques are being occasionally revised and continually improved, the process of learning must also continue.

There has been a perception that the Corps plan formulation process in some cases is being done in reverse. Project sponsors request that a minimum “level of protection” from the 1% annual exceedance event be provided, and the risk analysis is performed to justify that size project. Based on the presentations by the several Districts in attendance at this workshop, this perception is not a reality. The process followed by these Districts - formulate alternatives, identify Federal interest, identify the appropriate level of Federal investment, then evaluate locally-preferred plans and FEMA certification issues - is the correct process. It is important to remember that although the sponsor plays an important role in development of the recommended plan, the Corps must identify alternatives based on the NED criteria first.

Most discussions during this workshop have focussed on risk analysis for levee and channel projects, and little has been mentioned about nonstructural measures. Nonstructural measures never seem to be emphasized in Corps planning, using risk analysis or otherwise. In the past, this has been due in a large part to the lack of interest from the local sponsors. However, times are changing, and there is more local acceptance of these valid flood damage reduction measures. Districts should ensure that nonstructural measures are fully considered in the plan formulation process.

Much has been discussed this week concerning FEMA, the National Flood Insurance Program, and certification of levees for FEMA mapping needs. Those discussion do not need to be repeated here. What must be emphasized is the need for full coordination with FEMA during the Corps planning/design/construction process, to ensure that NFIP considerations are an integral part of that process.

**b. Challenges for the Corps Labs**

The Corps labs - HEC, WES, and IWR - have done an excellent job of developing and enhancing risk-based concepts for use in the Corps plan formulation process. The labs continue to work to improve risk-based procedures and to develop tools to aid the Districts in accomplishing their missions. In addition, from what we've heard this week, the labs have been major players in several important flood damage reduction studies, assisting the Districts in completion of feasibility studies using the risk-based approach. The challenge facing the labs is to work toward integration of other uncertainties such as those involving cost estimation, and structural and geotechnical analyses, into the risk-based procedures. The challenge facing headquarters, and ultimately the labs, is to continue to justify and commit adequate funding for these efforts.

**3. Challenges for the Federal Emergency Management Agency**

As mentioned above, much has been discussed this week concerning FEMA, the National Flood Insurance Program, and certification of levees for FEMA mapping needs. It is clear that there will always be differences between the Corps flood damage reduction program and the FEMA mission of disaster assistance/recovery and flood insurance. FEMA has worked very closely with the Corps in developing the procedures for providing Corps certification of levees to FEMA for flood insurance mapping purposes. What must be emphasized is the need for full coordination with FEMA during the Corps planning/design/construction process, to ensure that FEMA considerations are an integral part of that process.

Beyond that, a suggested challenge for FEMA would be to give serious consideration to use of risk analysis for flood insurance program endeavors. FEMA should consider requiring flood insurance even where flood damage reduction projects have been constructed to provide protection from flooding. FEMA should also consider using actuarial flood insurance rates that reflect the actual risk at a given location. By incorporating risk-based concepts in the mapping process, while retaining the "100-year" flood as a base flood, zones of true risk could be depicted on flood insurance maps, with insurance rates consistent with that risk being applied. Another area where risk analysis may be applicable is in the review of locally submitted grant applications for flood mitigation grants. Risk analysis may be an appropriate tool for evaluation and prioritization of these applications.

#### **4. Challenges for the Association of State Flood Plain Managers**

The Association of State Flood Plain Managers plays an important role with the Corps of Engineers. The ASFPM meets with OMB and testifies to Congress, playing an active part in defending the Corps budget and legislative initiatives. The ASFPM is a network of professionals dedicated to those same things that the Corps is dedicated to: flood damage reduction, environmental restoration, and other water resources issues. If the ASFPM has serious difficulties with efforts we have underway, we would do well to listen carefully to them and work to resolve those difficulties. The ASFPM should continue in its role as coordinator/mediator for technical and policy issues common to FEMA, the Corps and ASFPM members.

The ASFPM has the challenge of continuing to educate its members on the use of risk-based analysis. The Corps has hosted several workshops for ASFPM members on risk analysis and both the Corps and ASFPM should continue to look for opportunities to continue in these efforts.

#### **5. Challenges for our non-Federal partners**

The biggest challenge facing our non-Federal partners is to practice sound flood plain management. Understandably, there are many pressures being placed on the sponsors to not do the “right thing.” Better education of the public is one major step towards relieving some of those pressures, and output from the risk-based approach may provide the non-Federal sponsor with important information to be used for this education. Sponsors should also consider using risk-based analysis output in conjunction with FEMA criteria and regulations to resolve flood plain issues.

#### **6. Challenges for all parties**

The Corps must continue to encourage open dialogue with FEMA, ASFPM, states, local governments and the private sector on risk-based analysis issues. We should all strive for full coordination in these and other issues to ensure that the Corps procedures are developed and used in an appropriate manner.

